PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR AND DEVELOPER BASED ON WEBSITE

This Final Project Compiled as a Condition to Complete Bachelor Degree Program at the Informatics Department Faculty of Communication and Information

Submitted by:

MUHAMMAD SALMA ABDUL AZIZ

L 200 122 011

INFORMATICS DEPARTMENT

FACULTY OF COMMUNICATION AND INFORMATICS

UNIVERSITAS MUHAMMADIYAH SURAKARTA

2017

APPROVAL PAGE

PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR AND DEVELOPER BASED ON WEBSITE

SCIENTIFIC PUBLICATION

By:

Muhammad Salma Abdul Aziz

L 200 122 011

have been inspected and approved to be tested by :

Supervisor

(Ir. Bana Handaga, M.T, Ph.D.)

NIK : 793

AUTHENTICATION PAGE

PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR AND DEVELOPER BASED ON WEBSITE

By:

MUHAMMAD SALMA ABDUL AZIZ

L 200 122 011

It has been retained in front of the Board of Examiners
Faculty of Communication and Informatics
Muhammadiyah University Of Surakarta
On The Day Thursday 03 - 08 - **2017**
And declared eligible

Board of Examiners:

1. **Ir. Bana Handaga, M.T., Ph.D.** (.....)
   (Chief of Examiners Board)
2. **Umi Fadlilah, S.T., M.Eng.** (.....)
   (Member I of Examiners Board)
3. **Diah Priyawati, S.T., M.Eng.** (.....)
   (Member II of Examiners Board)

Dean

Nurgiyatna, S.T., M.Sc., Ph.D.
NIK: 881

Chief of Informatics Engineering Department

Heru Supriyono, M.Sc., Ph.D.
NIK: 970

ii

DECLARATION

I declare that this final project does not contain works that have been proposed to obtain a degree in college and throughout my knowledge also does not contain work or opinions that ever written or published by another person, except being referred to in the text and mentioned in the bibliography. If it is proven later that there is untruth in my statement above, I will be fully responsible.

Surakarta, 18 July 2017

Author

MUHAMMAD SALMA ABDUL AZIZ

L 200 122 011

iii

UNIVERSITAS MUHAMMADIYAH SURAKARTA
FAKULTAS KOMUNIKASI DAN INFORMATIKA
PROGRAM STUDI INFORMATIKA
Jl. A Yani Tromol Pos 1 Pabelan Kartasura Telp. (0271)717417, 719483 Fax (0271) 714448
Surakarta 57102 Indonesia. Web: http://informatika.ums.ac.id. Email: informatika@ums.ac.id

SURAT KETERANGAN LULUS PLAGIASI

/A.3-II.3/INF-FKI/VIII/2017

Assalamu'alaikum Wr. Wb

Biro Tugas Akhir Program Studi Informatika menerangkan bahwa :

Nama	:	MUHAMMAD SALMA ABDUL AZIZ
NIM	:	L200122011
Judul	:	PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR AND DEVELOPER BASED ON WEBSITE
Program Studi	:	Informatika
Status	:	**Lulus**

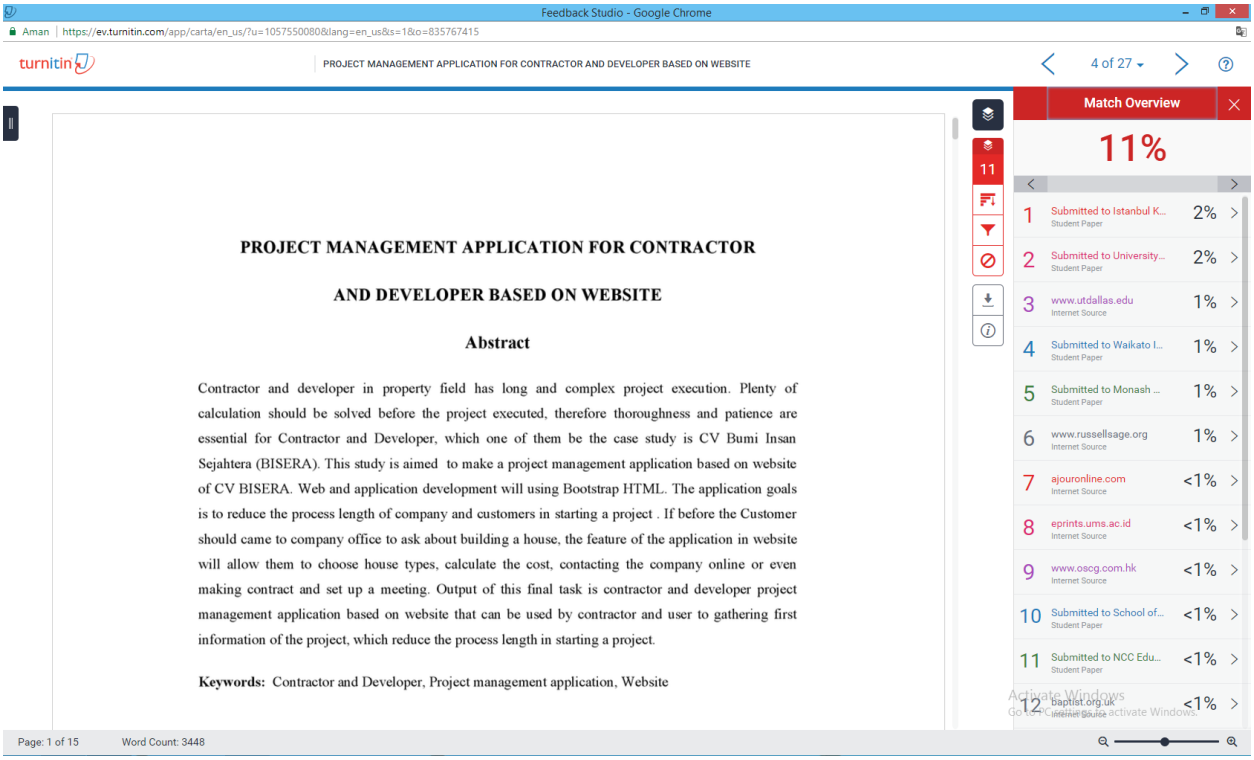
Adalah benar-benar sudah lulus pengecekan plagiasi dari Naskah Publikasi Tugas Akhir, dengan menggunakan aplikasi Turnitin.

Demikian surat keterangan ini dibuat agar dipergunakan sebagaimana mestinya.

Wassalamu'alaikum Wr. Wb

Surakarta, 8 Agustus 2017
Biro Tugas Akhir Informatika

Endang Wahyu Pamungkas, S.Kom., M.Kom.


Feedback Studio - Google Chrome
Aman | https://ev.turnitin.com/app/carta/en_us/?u=1057550080&lang=en_us&s=1&o=835767415
turnitin
PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR AND DEVELOPER BASED ON WEBSITE
4 of 27
PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR
AND DEVELOPER BASED ON WEBSITE
Abstract
Contractor and developer in property field has long and complex project execution. Plenty of calculation should be solved before the project executed, therefore thoroughness and patience are essential for Contractor and Developer, which one of them be the case study is CV Bumi Insan Sejahtera (BISERA). This study is aimed to make a project management application based on website of CV BISERA. Web and application development will using Bootstrap HTML. The application goals is to reduce the process length of company and customers in starting a project . If before the Customer should came to company office to ask about building a house, the feature of the application in website will allow them to choose house types, calculate the cost, contacting the company online or even making contract and set up a meeting. Output of this final task is contractor and developer project management application based on website that can be used by contractor and user to gathering first information of the project, which reduce the process length in starting a project.
Keywords: Contractor and Developer, Project management application, Website
Match Overview
11%
1 Submitted to Istanbul K... Student Paper 2%
2 Submitted to University... Student Paper 2%
3 www.utdallas.edu Internet Source 1%
4 Submitted to Waikato I... Student Paper 1%
5 Submitted to Monash ... Student Paper 1%
6 www.russellsage.org Internet Source 1%
7 ajouronline.com Internet Source <1%
8 eprints.ums.ac.id Internet Source <1%
9 www.oscg.com.hk Internet Source <1%
10 Submitted to School of... Student Paper <1%
11 Submitted to NCC Edu... Student Paper <1%
12 baptist.org.uk Internet Source <1%
Activate Windows
Page: 1 of 15
Word Count: 3448

PROJECT MANAGEMENT APPLICATION FOR CONTRACTOR AND DEVELOPER BASED ON WEBSITE

Abstrak

Kontraktor dan pengembang di bidang properti memiliki proyek yang panjang dan kompleks. Banyak kalkulasi yang harus diselesaikan sebelum proyek dapat dilaksanakan, maka ketelitian dan kesabaran penting bagi kontraktor dan developer, yang salah satunya menjadi studi kasus yaitu CV. Bumi Insan Sejahtera (BISERA). Penelitian bertujuan untuk membuat aplikasi manajemen proyek berbasis website dari CV. BISERA. Pengembangan web dan aplikasi menggunakan Bootstrap HTML. Tujuan aplikasi adalah untuk mengurangi waktu bagi perusahaan dan pelanggan untuk memulai sebuah proyek. Jika sebelumnya pelanggan harus datang ke kantor perusahaan untuk bertanya tentang membangun rumah, fitur dari aplikasi ini membolehkan mereka untuk memilih jenis rumah, menghitung biaya, menghubungi perusahaan secara online atau bahkan membuat kontrak dan membuat janji pertemuan. Keluaran dari tugas akhir ini adalah aplikasi manajemen proyek untuk kontraktor dan pengembang berbasis website yang bisa digunakan oleh kontraktor dan pelanggan untuk mengumpulkan informasi pertama dari proyek, yang akan mengurangi panjang proses dalam memulai proyek.

Kata kunci: Kontraktor dan Developer, Aplikasi Manajemen Proyek, Website

Abstract

Contractor and developer in property field has long and complex project execution. Plenty of calculation should be solved before the project executed, therefore thoroughness and patience are essential for Contractor and Developer, which one of them be the case study is CV Bumi Insan Sejahtera (BISERA). This study is aimed to make a project management application based on website of CV BISERA. Web and application development will using Bootstrap HTML. The application goals is to reduce the process length of company and customers in starting a project . If before the Customer should came to company office to ask about building a house, the feature of the application in website will allow them to choose house types, calculate the cost, contacting the company online or even making contract and set up a meeting. Output of this final task is contractor and developer project management application based on website that can be used by contractor and user to gathering first information of the project, which reduce the process length in starting a project.

Keywords: Contractor and Developer, Project management application, Website

1. INTRODUCTION

Indonesia has the fourth highest human population of all country in the world in year 2015, With 259.4 million citizen and 20 birthrates every 1000 populations a year according to data from Population Reference Bureau of United Nations (2015). So if calculated, in 2025 Indonesia would have approximately 280 million people with 1% a year death rates. This condition and prediction lead us to many kind of problem, especially living place or housing.

Housing is one of the basic human needs to live their life, without it they will easy to suffer and have a less chance to survive. The housing also need to build properly by the need of consument, and considering the place, design, sustainability and environtment. Thus Property developer, or often be called contractor is being importance in this era. Despite Indonesia still have low consumption power in property field, but a survey by Bank Indonesia (2016) showed an increasing residential property price and selling by 0,37% (before 0,36%) and 5,06% (before 4,65%) in quarter VI of 2016. It means the demand of housing is increased day by day, along with the population growth.

Contractor and developer, as an entity that handle in housing, shall aware that the increasing demand must be fulfilled with sufficient supply, and easy access of it. Especially for the common people who need a lot of information about the cost and process to build a housing. Therefore the use of web based information system will be very helpful for contractor in marketing and for the customers who are curious about how they can build a house.

This problem also encountered by CV Bumi Insan Sejahtera (BISERA), one of contractor in Sukoharjo City who don't have a proper information system which can help their work and also, the responsibility in provides housing. The web will built with some customer friendly application like cost estimation to build a house, online interaction with contractor, home types option, and in particular the customer will know the project management of the contractor in conducting their jobs.

Project management itself, according to *A guide to project management body of knowledge* (PMBOK), definition of project management (1996) is "The application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectation from a project." It means project management is an attempt by

project manager to make their work fulfilled the expectations, by considering many phase, which is define as initiation phase, definition, design, development, implementation and follow-up (Baars, 2006).

According to PMBOK's definition of project management, this study will concern in initiation phase. The application later will gathering data and information about customers who want to cooperate with CV BISERA to build their house.

2. METHODOLOGY

This study is categorized as applicative studies to find a solution of a problem happened in reality. System development conducted referring to *System Development Lifecycle* (SDLC), implementing *waterfall* model, a sequential design process which progress is seen as flowing downwards like a waterfall, to develop website.

2.1 Requirement Analysis

Requirement analysis is step to determine the system requirement should be fulfilled during system development. The analysis started with collecting data from CV. Bumi insan Sejahtera to know their project management as the main reason of this study. Next, an interview was performed with company owner to get more information about project management in practice and choose some part that can be made as an online application.

The result of requirement analysis explain the need of the company to make a project management application that could be put in website. The application will consist of several element such as cost estimation, house types option and make a proposal of interest of building a house shaped as form. The company also want to put a communication application in web used to communicate with consumer.

2.2 System Design

The next step is designing the application system based on requirement analysis conducted before. System design is the determination of the overall system architecture—consisting of a set of physical processing components, hardware, software, people, and the communication among them—that will satisfy the system's essential requirements (Shumate &

Keller, 1992). This step use to make a general image of the system would be developed in CV. Bumi Insan Sejahtera web based application.

2.3 Use-case diagram design

A use case diagram is a graph of actors, a set of use cases enclosed by a subject boundary (a rectangle), associations between the actions and the use cases, relationships among the use cases,and generalization among the actors. Use case diagrams show elements from the use case model (use cases, actors)". In brief, use case diagram is an expected imaginary of the website, focusing on what to show, not how to show. Use case diagram shows relation between actor and system. Actor is human or machine who run the system to conduct particular task (Rumbaugh et al, 2004).

Below is Use case diagram for admin and user :

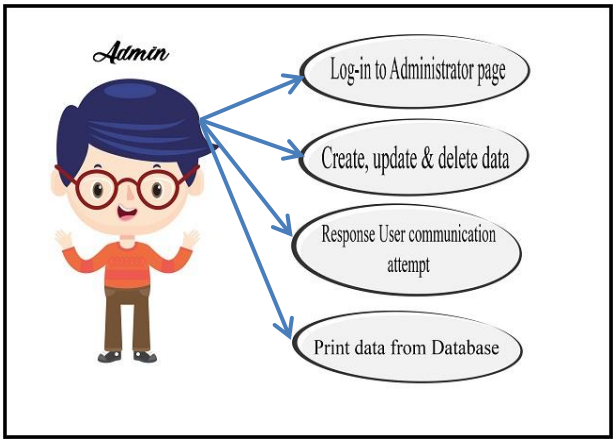


Figure 1. Use Case Diagram Admin

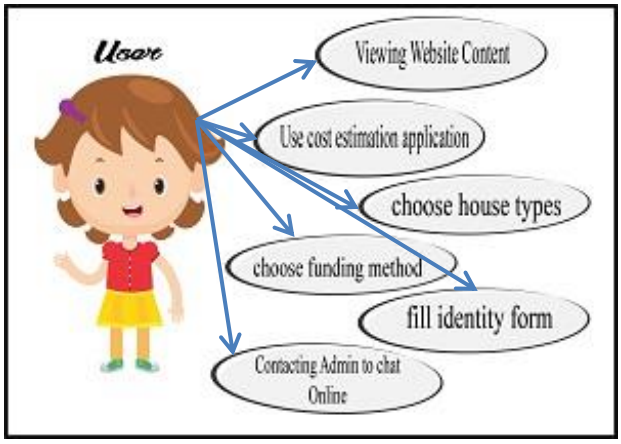


Figure 2. Use Case Diagram User

Figure 1 shows the authority of admin starting from login to administrator page to fully manage the website. Admin can add information to website. Admin also can delete the information that had been added before. Admin can update the information shown in the website. Admin can response to user communication attempt. And the last admin can print the data from application.

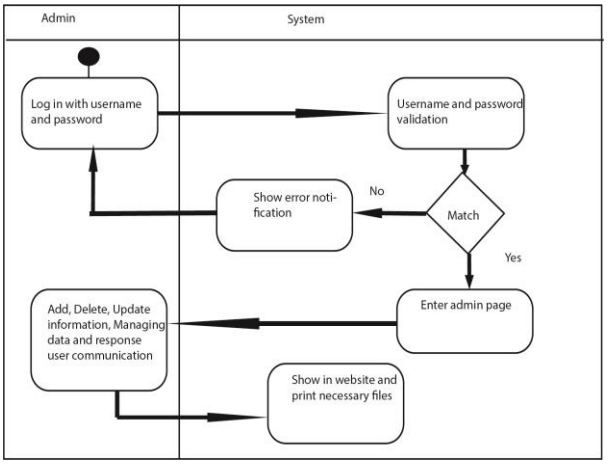
Figure 2 show the user authority in websites. User can viewing information in website and use the application provided starting from cost estimation, choosing house types, choose

funding method and fill identity form. User could also make an attempt to communicate with admin.

2.4 Activity Diagram

Activity diagram is one of the important modeling artifacts used in UML, that are used to model sequence of actions as part of the process flow. It is used to model sequence of actions to capture the process flow actions and its results. It focuses on the work performed in the implementation of an operation (a method), and the activities in use case instance or in an object (Bhattacharjee & Shyamasundar 2009).

Below is the activity diagram for admin and user



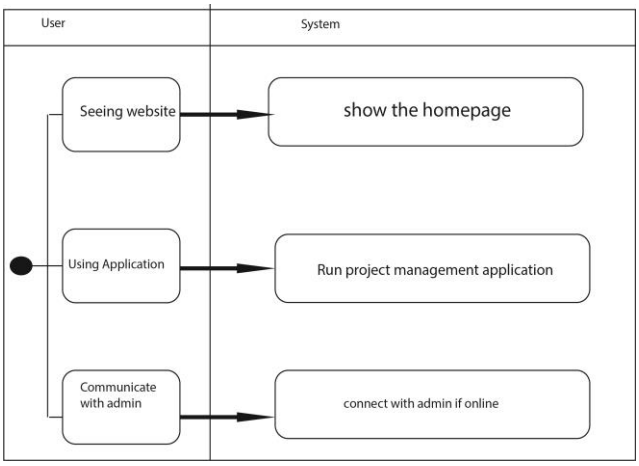


Figure 3. Activity diagram Admin

Figure 4. Activity diagram user

Figure 3 presenting that admin can login by input username and password, then the system will validate the username and password input by admin if its match. If it isn't match the system will redirect to to log in page. If its match will directing to admin page. In admin page, admin can add, delete or update information in website, and also collect the data input from user, and response user communication. All of it then will shown in website page.

Figure 4 presenting that user can see the website homepage which contain application and company profile. User can using the application to gain information about their desired house. Then, user can make an attempt to communicate with admin if he is online.

2.5 Hardware and software in use

The hardware uses to design and testing including a laptop of Lenovo, with processor AMD E1-6010 APU 1.35 Ghz with AMD Radeon R2 Graphic, RAM upgraded to 4GB form 2GB, and the software incuding Microsoft Windows 10 Professional, Google Chrome, Bootstrap, and XAMPP v3.2.2, Notepad++ and MIBEW as the chat system.

2.6 Interface design

The design of the homepage can be seen in Figure 5.

Figure 5. Homepage design

Figure 5 show the website homepage. Intro shows welcome picture and teaser for web visitor. Application start button will lead to application page. Header contain the company name (CV.BISERA). Content will present as link to view website content.

2.7 System Implementation

The system implementation will resulted a web based application that allow contractor customer to gain information about their dream house and communicate with contractor to starting the project. User when opening the web hompage, they can click to build your house button that will directing them to first application to estimate the cost needed to build house with certain specification. Next, after they have the cost result, they will directed to house types option application to choose their preferred types. Next they can choose which funding method to build the house. After choosing the funding method, user can fill identity and information form that will sent to contractor.

Sometimes the user have a bit confusion about the results, so the application to communicate with admin is necessary to add further information real time. The communication

application will accessible in the last application page, and can be used if both user and admin online or send message if admin is offline.

2.8 Testing

Testing conducted to determine if the built system can run properly as required. Testing performed on two steps, partial testing to know did every part running well and after that the full test will conducted (Supriyono, Kurniawan & Rakhmadi). At this step, implemented system will tested to determine which part need evaluation.

2.9 Operation and Maintenance

This step determine the system operation in reality, and will run in common browser. System maintenance is aimed to keep the system runnin well by doing monthly checking and read the user response if there is any bug exist.

3. RESULT AND DISCUSSION

3.1 Application Results

3.1.1 Admin Page

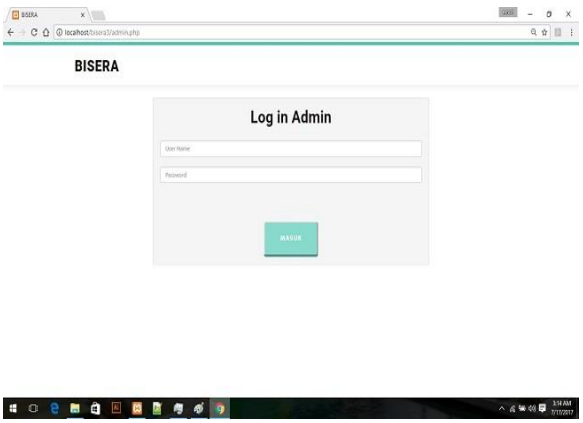


Figure 6. Log in Admin

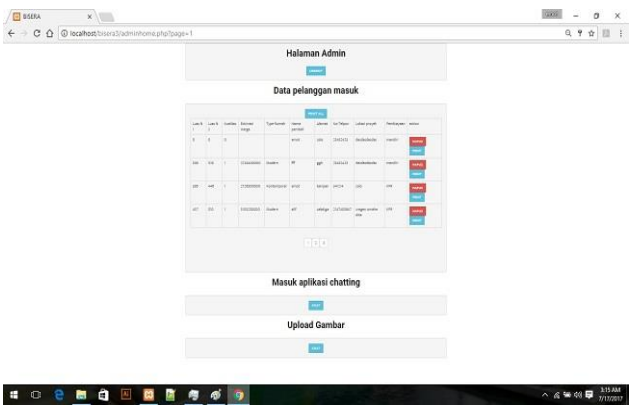


Figure 7. Admin page

The administrator page can be accessed by admin after input his username and password in the form shown in Figure 6. If admin input the username and password correctly, the page will directing to administrator page shown in figure 7. But if admin input wrong username or password, or he not input one of them or both, the page will shows error notification then redirect to log in page again.

Figure 7 is administrator page, it shows the function can run by admin. There is a log-out button. data of customer have had input their information into the application. Administrator can print out the data in database to pdf format with print or print all button, and delete with delete button. The result of printed pdf file of user data can be seen in figure 8. Chatting button will directing to chatting page can be seen in figure 9. And image upload page to upload, update, and delete image and its information.

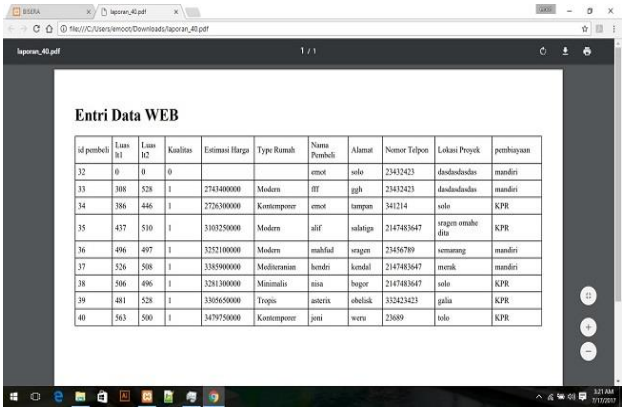


Figure 8. Generated PDF Files

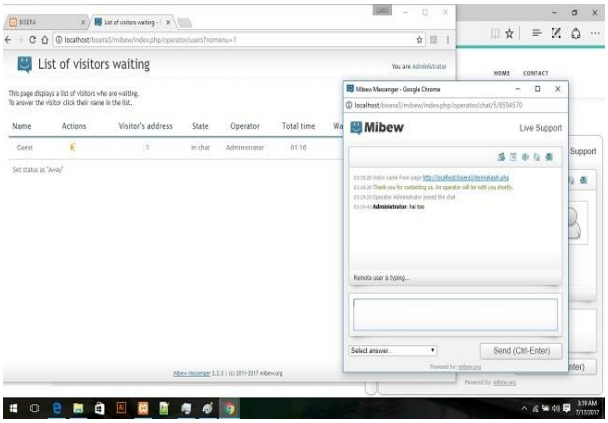


Figure 9. MIBEW interface to chat with user

Figure 10 below is upload image page which contain upload button to upload image and adding information. Delete button to delete the image and its information. Edit button to change the image or the image information

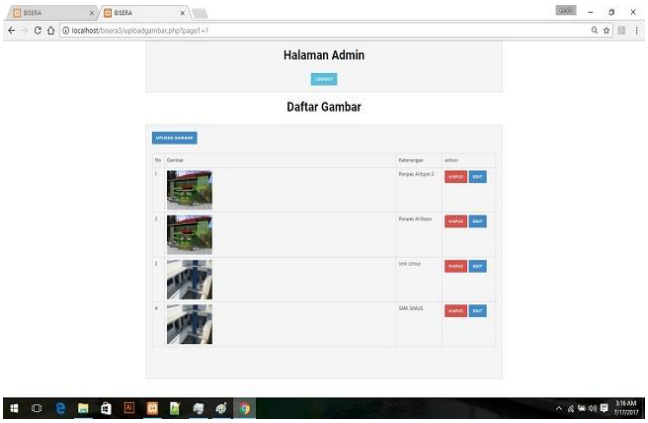


Figure 10. Upload Image

3.1.2 HomePage

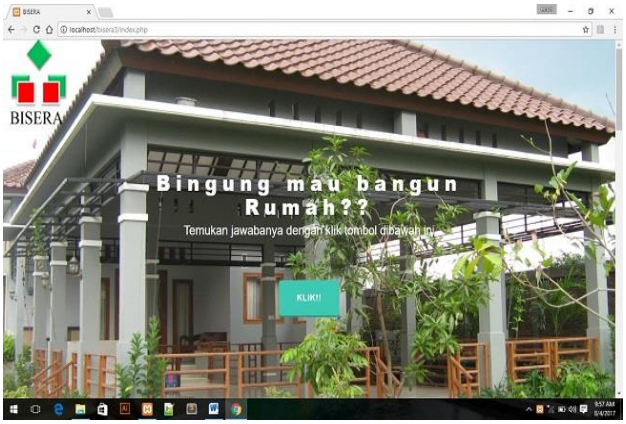


Figure 11. Homepage Intro

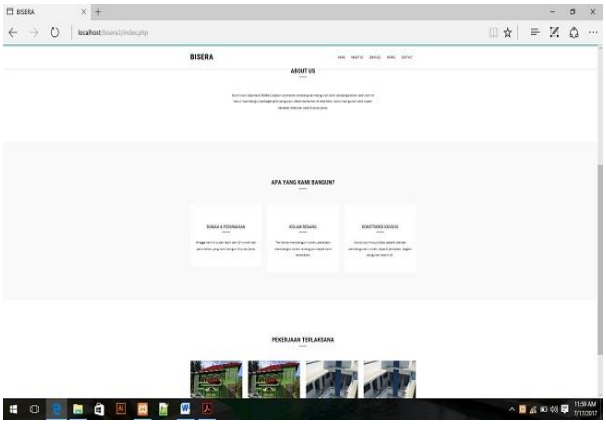


Figure 12. Homepage Content

Homepage is the first page viewed by the user. Figure 11 shows the intro of homepage, containing teaser that softly directing user to click the button that will led to application page. When the intro scrolled down, the navigation bar will shown. It has home button, about us, services, works, and contact. The rest of homepage shown in figure 12 contain the information of CV. Bisera, what its concern in project and the project that have accomplished by.

3.1.3 Application Systematic

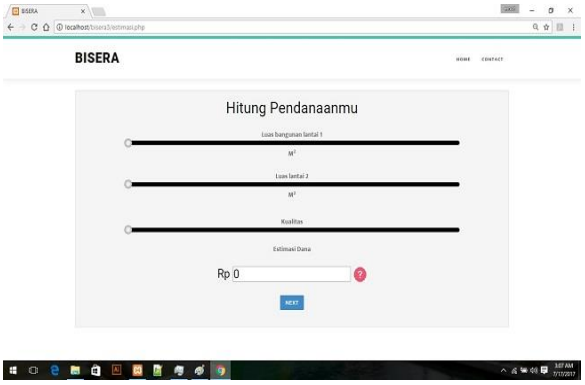


Figure 13. Cost estimation page

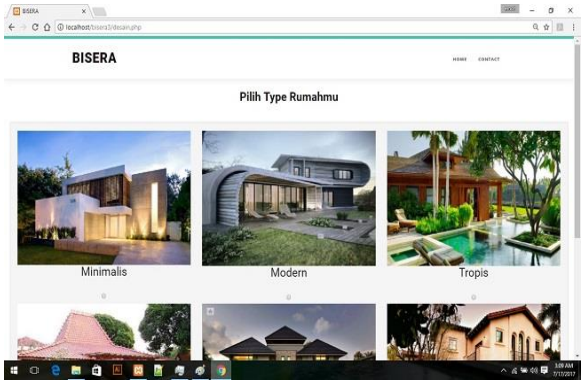


Figure 14. House types option page

The project management application start when user click the button at the website intro. First page they will view is cost estimation page shown by figure 13. This application will calculate the cost estimation to build the user house based on its wide and quality, the formula to build the application can be seen in figure 15. After clicking the next button, user will directed to house types option page, contains many illustration of house types such as mediteranian, traditional or modern types seen in figure 14.

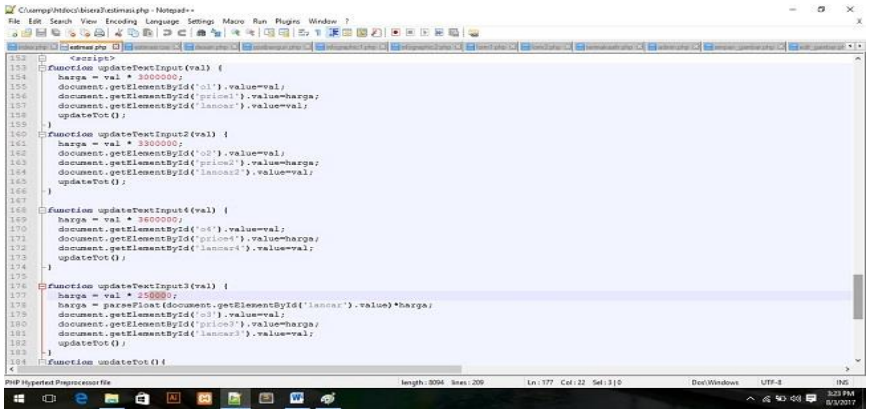


Figure 15. Formula of Cost Estimation Application

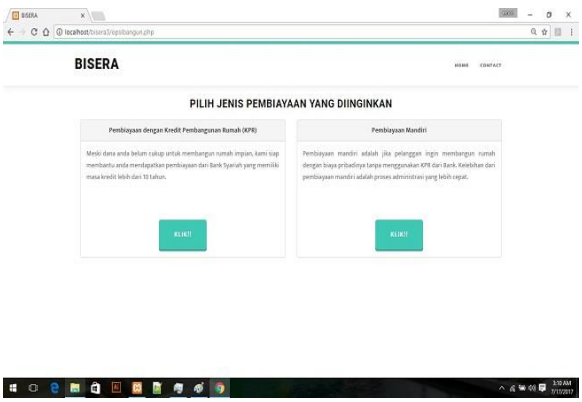


Figure 16. Funding method option

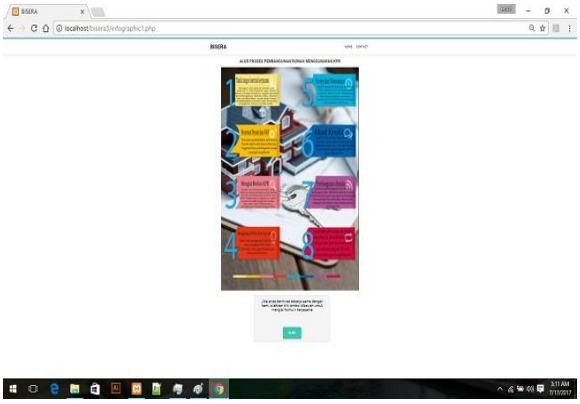


Figure 17. Infographic of project management

Next user will directed to funding method they prefer to use shown by figure 16. There is two method can be choose, which is Bank credit if they don't have enough money to pay the cost of building house at once, and personal funding for the customer had enough money to manage the building cost covered. If they pick one of those option, the page will directed to infographic that explains the project management from both method. The infographic can be seen in figure 17.

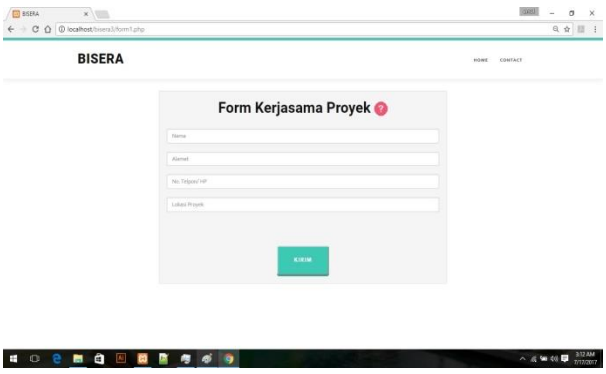


Figure 18. Form of customer

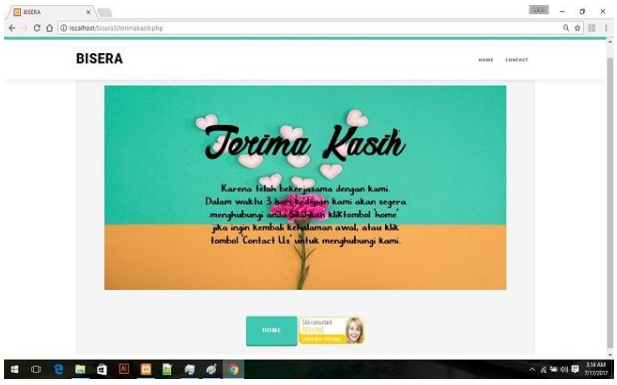


Figure 19. Appreciation page

The last two page is form to be filled by user if they are interested to cooperate with CV. BISERA in building their house. The page contain 4 variables to filled by, named Name, Address, Phone Number and project location as shown in figure 18. When the user done to fill the form, they will directed to last page named appreciation page. The page contains picture with information that admin will contact them soon to conduct further communication. Below the picture, shown in figure 19, there is two button, one will redirect to homepage and other will shows chatting window to communicate with admin.

3.2 Discussion

Small surveys conducted to test the application performance. Ten of Muhammadiyah University of Surakarta students were involved. They will trying to use the application in localhost and answering 5 questions representing *Interface design, Instruction, Application Performance, Information Presentation* and *Marketing*. Each question have point 1 to 3. Greater the number, more satisfaction or agreement experienced by surveyor. The table below shows the result:

Table.1. Survey result

Question	Surveyor										Total
	A	B	C	D	E	F	G	H	I	J	
I. Does the application interface was good enough?	2	3	2	2	2	1	2	2	2	2	20/30
II. Does the instructions clear enough?	3	3	2	3	3	2	1	3	3	2	25/30
III. Does the application running well?	3	3	3	2	3	2	1	3	3	3	26/30
IV. Does the application help you to imagine the process of building a house?	3	3	1	1	2	3	2	2	2	2	21/30
V. Suppose you have plan to build a house, then you visit web of CV. BISERA with this application. would you interested to build it with us?	3	3	2	1	2	2	2	3	3	2	23/30

From the survey result, the lowest total point earned by *Interface Design,* and the highest was *Application Performance.* Its indicate which part of the web need more improvement. The *Instruction* variable get second high of total point, shows that user consider

the instruction is clear enough to guide them using the application. The *Marketing* variable represented by the last question also get high point, means the application can perform marketing act good enough. Overall point achieved reach 20 or more points for each variables in this survey express positive result on user side.

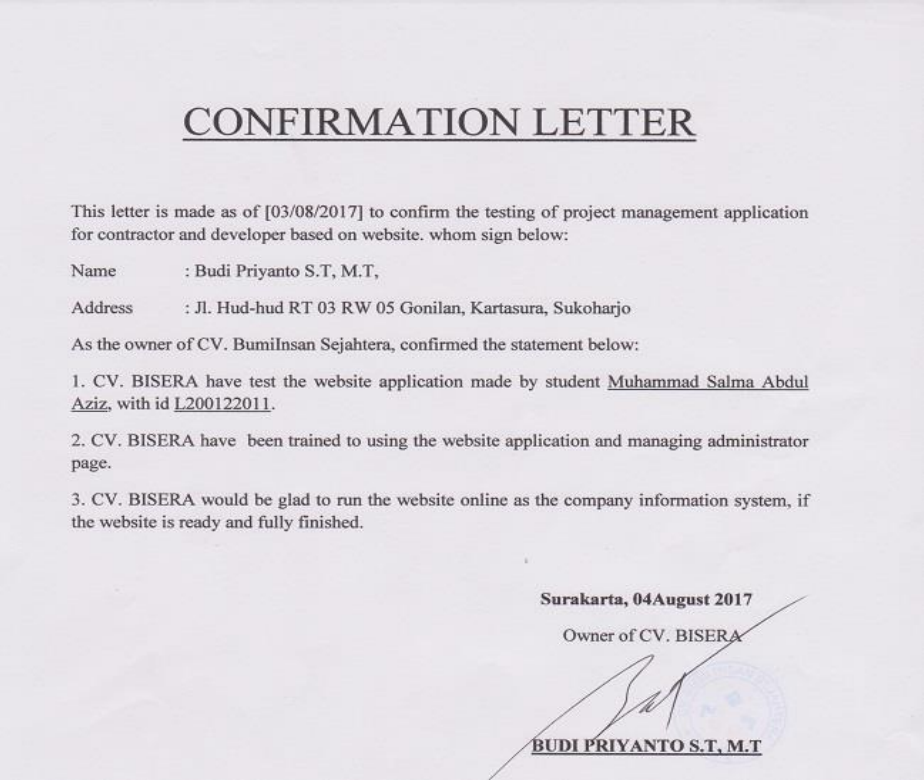
Small surveys also conducted to CV. BISERA owner and one of its admin with a little modified question but the same point measurement and valuation. First until third question is the same, but the fourth and fifth is different. The details and result can be seen in table 2 below:

Table.2. Survey Result of CV. BISERA

Surveyor	Question				
	I. Does the application interface was good enough?	II. Does the instructions clear enough?	III. Does the application running well?	IV. Does this application will help reduce length of CV.BISERA project management?	V. Does CV. BISERA want to develop further this web application?
Owner of CV.BISERA (Mr. Budi Priyanto)	3	3	3	2	3
Admin of CV. BISERA (Mrs. Nur Amalia)	2	2	3	2	2
TOTAL	5/6	5/6	6/6	4/4	5/6

From the survey result of CV. BISERA, the lowest total point earned by question number four, which is the process length reduction of project management, and the highest was *Application Performance*. Its indicate which part of the web need more improvement. The length of project management reduction got the fewest point because it only cover initiation phase. Owner suggest to make monitoring application for customer with id, so it can cover more than one phase. Overall point achieved reach 4 or more points for each variables in this survey express positive result on company or admin side.

At last, the web application had been tested by CV. BISERA owner and admin seemed to be satisfied them and they decide to use the web after it ready to launch. CV. BISERA owner state it in the confirmation letter that can be seen in figure 20 below:



CONFIRMATION LETTER

This letter is made as of [03/08/2017] to confirm the testing of project management application for contractor and developer based on website. whom sign below:

Name : Budi Priyanto S.T, M.T,

Address : Jl. Hud-hud RT 03 RW 05 Gonilan, Kartasura, Sukoharjo

As the owner of CV. BumiInsan Sejahtera, confirmed the statement below:

1. CV. BISERA have test the website application made by student Muhammad Salma Abdul Aziz, with id L200122011.

2. CV. BISERA have been trained to using the website application and managing administrator page.

3. CV. BISERA would be glad to run the website online as the company information system, if the website is ready and fully finished.

Surakarta, 04August 2017

Owner of CV. BISERA

BUDI PRIYANTO S.T, M.T

Figure 20. Confirmation Letter

4. CONCLUSION AND RECOMMENDATION

4.1 Conclusion

Output of this final task is contractor and developer project management application based on website that can be used by contractor and user to gathering first information of the project, which reduce the process length in starting a project. Cost estimation application can be a threshold for calculating project cost for user. User can also measure their funding power to choose their funding method later.

Information of project management for each funding method will give an imagery to user about how the project later will work. The imagery can help user understanding the path, calculating how much the project will take time and effort. Choosing House types also give an image of the user dream house, it will be urge for them to work harder to reach their dream.

Implementation of this application in contractor field can be a big help either for contractor or user. Many features of the application provide source of information can be used to reduce process length in starting a project. The application also support CV. BISERA to get more customer, and data source of people house specification demand that later can be managed to advertisement design.

4.2 Recommendation

Good nuance and information clarity in the web can lead to attract customer. But if the customer only involved until they were done filling the form, it weren't interactive and customer friendly enough. It will be a good idea, for later development of the web, to add log-in page for customer so they can do more thing. Managing cost of project online or monitoring their running project from home would be a great invention. Also adding RSS links that provide news about latest housing demand and price would provide more information for the user.

5. CLOSING

Based on the application content, this application can be useful for customer who want to gain information of building a house. The testing also running well for several attempt to use the application conducted in more than one browser. The website also light, so the changing of page done rapidly. The customer later will get many benefit by getting precious information on the web, thus the web were not mere application, but also an advanced advertisement.

BIBLIOGRAPHY

Baars, W. (2006). *Project Management Handbook.* Data Archiving and Networking Service. San Fransisco, USA

Bank of Indonesia. (2017, February 14). *Commercial property development report*. Retrieved March 17, 2017, from http://www.bi.go.id/id/publikasi/survei/properti-komersial/Pages/PPKom_TW4_2016.aspx

Bhattacharjee, A., & Shyamasundar, R. (2009). Activity Diagrams : A Formal Framework to Model Business Processes and Code Generation. *The Journal of Object Technology*, 8(1), 189. doi:10.5381/jot.2009.8.1.a3

Project Management Institute. (1996). *A Guide to the Project Management Body of Knowledge*. PMI Publishing, North Carolina, USA

Rumbaugh, J., Jacobson, I., & Booch, G. (2004). *The Unified Modelling Language Reference Manual: Second edition*. Pearson Education, inc., Boston

Shumate, K., & Keller M. (1992). *Software Specification and Design*. New York: John Wiley & Sons

Supriyono, H., Kurniawan, A., & Rakhmadi, A. (2016). Perancangan dan pembuatan sistem pintu otomatis menggunakan barcode. *KomuniTi*, 5(1)

United Nations. (2015, August). *World population data sheet.* Retrieved March 17, 2017, from www.prb.org/pdf15/2015-world-population-data-sheet_eng.pdf